

INSTALLATION MANUAL

DUCT TYPE

Thank you very much for purchasing our air conditioner,
Before using your air conditioner , please read this manual carefully and keep it for future reference.

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1. PRECAUTIONS

- Be sure to be in conformity with the local, national and international laws and regulations.
- Read "PRECAUTIONS" carefully before installation.
- The following precautions include important safty items. Observe them and never forget.
- Keep this manual with the owner's manual in a handy place for future reference.

The safty precautions listed here are divided into two categories. In either case, important safty information is listed which must be read carefully.



WARNING

Failure to observe a warning may result in death.



CAUTION

Failure to observe a caution may result in injury or damage to the equipment.

After completing the installation, make sure that the unit operates properly during the start-up operation. Please instruct the customer on how to operate the unit and keep it maintained. Also, inform customers that they should store this installation manual along with the owner's manual for future reference.



WARNING

Be sure only trained and qualified service personnel to install, repair or service the equipment.

Improper installation, repair, and maintenance may result in electric shocks, short-circuit, leaks, fire or other damage to the equipment.

Install according to this installation instructions strictly.
If installation is defective, it will cause water leakage, electrical shock fire.

When installing the unit in a small room, take measures against to keep refrigerant concentration from exceeding allowable safety limits in the event of refrigerant leakage.
Contact the place of purchase for more information. Excessive refrigerant in a closed ambient can lead to oxygen deficiency.

Use the attached accessories parts and specified parts for installation.
otherwise, it will cause the set to fall, water leakage, electrical shock fire.

Install at a strong and firm location which is able to withstand the set's weight.
If the strength is not enough or installation is not properly done, the set will drop to cause injury.

The appliance must be installed 2.5m above floor.

The appliance shall not be installed in the laundry.

Before obtaining access to terminals, all supply circuits must be disconnected.

The appliance must be positioned so that the plug is accessible.

The enclosure of the appliance shall be marked by word, or by symbols, with the direction of the fluid flow.

For electrical work, follow the local national wiring standard, regulation and this installation instructions. An independent circuit and single outlet must be used.
If electrical circuit capacity is not enough or defect in electrical work, it will cause electrical shock fire.

Use the specified cable and connect tightly and clamp the cable so that no external force will be acted on the terminal.
If connection or fixing is not perfect, it will cause heat-up or fire at the connection.

Wiring routing must be properly arranged so that control board cover is fixed properly.
If control board cover is not fixed perfectly, it will cause heat-up at connection point of terminal, fire or electrical shock.

If the supply cord is damaged, it must be replaced by the manufacture or its service agent or similarly qualified person in order to avoid a hazard.

An all-pole disconnection swith having a contact separation of at least 3mm in all poles should be connected in fixed wrong.

When carrying out piping connection, take care not to let air substances go into refrigeration cycle.
Otherwise, it will cause lower capacity, abnormal high pressure in the refrigeration cycle, explosion and injury.

Do not modify the length of the power supply cord or use of extension cord, and do not share the single outlet with other electrical appliances.
Otherwise, it will cause fire or electrical shock.

Carry out the specified installation work after taking into account strong winds, typhoons or earthquakes.
Improper installation work may result in the equipment falling and causing accidents.

If the refrigerant leaks during installation, ventilate the area immediately.

Toxic gas may be produced if the refrigerant comes into the place contacting with fire.

The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.

After completing the installation work, check that the refrigerant does not leak.

Toxic gas may be produced if the refrigerant leaks into the room and comes into contact with a source of fire, such as a fan heater, stove or cooker.



CAUTION

Ground the air conditioner.

Do not connect the ground wire to gas or water pipes, lightning rod or a telephone ground wire. Incomplete grounding may result in electric shocks.

Be sure to install an earth leakage breaker.

Failure to install an earth leakage breaker may result in electric shocks.

Connect the outdoor unit wires, then connect the indoor unit wires.

You are not allowed to connect the air conditioner with the power source until wiring and piping the air conditioner is done.

While following the instructions in this installation manual, install drain piping in order to ensure proper drainage and insulate piping in order to prevent condensation.

Improper drain piping may result in water leakage and property damage.

Install the indoor and outdoor units, power supply wiring and connecting wires at least 1 meter away from televisions or radios in order to prevent image interference or noise.

Depending on the radio waves, a distance of 1 meter may not be sufficient enough to eliminate the noise.

The appliance is not intended for use by young children or infirm persons without supervision.

Don't install the air conditioner in the following locations:

- There is petrolatum existing.
- There is salty air surrounding (near the coast).
- There is caustic gas (the sulfide, for example) existing in the air (near a hot spring).
- The Volt vibrates violently (in the factories).
- In buses or cabinets.
- In kitchen where it is full of oil gas.
- There is strong electromagnetic wave existing.
- There are inflammable materials or gas.
- There is acid or alkaline liquid evaporating.
- Other special conditions.

2. INSTALLATION INFORMATION




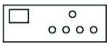




- To install properly, please read this "installation manual" at first.
 - The air conditioner must be installed by qualified persons.
 - When installing the indoor unit or its tubing, please follow this manual as strictly as possible.
 - If the air conditioner is installed on a metal part of the building, it must be electrically insulated according to the relevant standards to electrical appliances.
 - When all the installation work is finished, please turn on the power only after a thorough check.
 - Regret for no further announcement if there is any change of this manual caused by product improvement.
-

INSTALLATION ORDER

- Select the location;
- Install the indoor unit;
- Install the outdoor unit;
- Install the connecting pipe ;
- Connect the drain pipe;
- Wiring;
- Test operation.

3. ATTACHED FITTINGS

Please check whether the following fittings are of full scope. If there are some spare fittings , please restore them carefully.

| NAME | QUANTITY | SHAPE | USAGE |
|-----------------------------------|----------|---|------------------|
| 1. Pipe insulating material | 2 |  | (Heat resisting) |
| 2. Drain elbow | 1 |  | To connect drain |
| 3. Seal | 1 |  | To connect drain |
| 4. Signal receiver display board | 1 |  | Receive Signal |
| 5. Remote controller | 1 |  | _____ |
| 6. Frame | 1 |  | _____ |
| 7. Mounting screw(ST2.9 × 10-C-H) | 2 |  | _____ |
| 8. Alkaline dry batteries (AM4) | 2 |  | _____ |
| 9. Remote controller manual | 1 | _____ | _____ |
| 10. Owner's manual | 1 | _____ | _____ |
| 11. Installation manual | 1 | This manual | _____ |

Cautions on remote controller installation:

- Never throw or beat the controller.
- Before installation, operate the remote controller to determine its location in a reception range.
- Keep the remote controller at least 1m apart from the nearest TV set or stereo equipment. (it is necessary to prevent image disturbances or noise interferences.)
- Do not install the remote controller in a place exposed to direct sunlight or close to a heating source, such as a stove.
- Note that the positive and negative poles are right positions when loading batteries.
- This manual is subject to changes due to technological improvement without further notices.

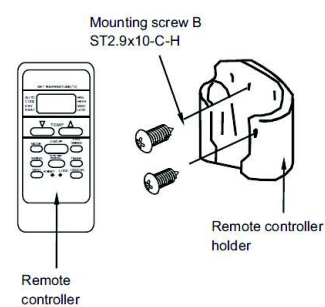




Fig.3-1

4. INSPECTING AND HANDLING THE UNIT

At delivery, the package should be checked and any damage should be reported immediately to the carrier claims agent.

When handling the unit, take into account the following:

- 1  Fragile, handle the unit with care.
 Keep the unit upright in order to avoid compressor damage.
- 2 Choose on before hand the path along which the unit is to be brought in.
- 3 Move this unit as originally package as possible.
- 4 When lifting the unit , always use protectors to prevent belt damage and pay attention to the position of the unit's centre of gravity.

5. INDOOR UNIT INSTALLATION

5.1 Installation place

(refer to Fig.5-1 for specification.)

The indoor unit should be installed in a location that meets the following requirements:

- There is enough room for installation and maintenance.
- The ceiling is horizontal, and its structure can endure the weight of the indoor unit.
- The outlet and the inlet are not impeded, and the influence of external air is the least.
- The air flow can reach throughout the room.
- The connecting pipe and drainpipe could be extracted out easily.
- There is no direct radiation from heaters.



CAUTION

Keep indoor unit, outdoor unit, power supply wiring and transmission wiring at least 1 meter away from televisions and radios. This is to prevent image interference and noise in those electrical appliances. (Noise may be generated depending on the conditions under which the electric wave is generated, even if 1 meter is kept.)

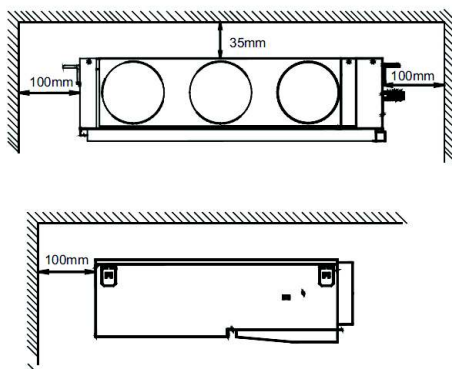


Fig.5-1



NOTE

Notes Before Installation

Identify the correct transporting route.

Move the air conditioner in its original package as possible as you can.

If the unit should be installed on the metal part of the building, electric insulation is necessary and make sure that it comply with the relevant technical standard of electric equipment.

5.2 Install hanging screw bolts

1 Installing $\Phi 10$ hanging screw bolts. (4 bolts)

- Please refer to the following figure for the hanging screw bolts distance
- Please install with $\Phi 10$ hanging screw bolts.
- The handling to the ceiling varies from the constructions, consult the construction person for the specific condition.
 - The size of the ceiling to be handled----- Do keep the ceiling flat. Consolidate the roof beam for possible vibration.
 - Cut off the roof beam.
 - Strengthen the place that has been cut off, and consolidate the roof beam.
- After the selection of installation location, position the refrigerant pipes, drain pipes, indoor & outdoor wires to the connection places before hanging up the machine.
- The installation of hanging screw bolts.

WOODEN CONSTRUCTION

Put the square timber transversely over the roof beam, then install the hanging screw bolts.

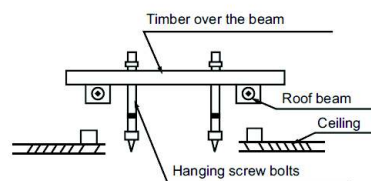


Fig.5-2

NEW CONCRETE BRICKS

In laying or embedding the screw bolts.

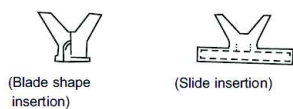


Fig.5-3

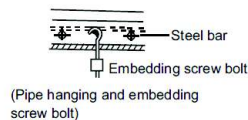


Fig.5-4

FOR ORIGINAL CONCRETE BRICKS

Install the hanging hook with expansible bolt into the concrete deep to 45~50mm to prevent loose.

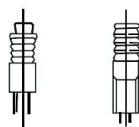


Fig.5-5

STEEL ROOF BEAM STRUCTURE

Install and use directly the supporting angle steel.

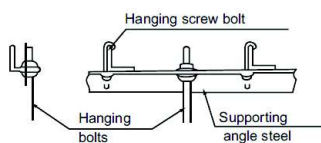


Fig.5-6

2 Overhanging the indoor unit

- Overhang the indoor unit onto the hanging screw bolts with block.
- Position the indoor unit in a flat level by using the level indicator, unless it may cause leakage.

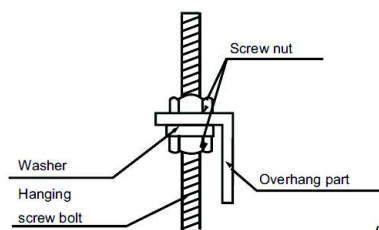


Fig.5-7

3 Installing the dust proof net and canvas air passage

- Install the dust proof net according to the installation manual.
- Install the canvas air passage underneath the dust proof net.

4 Pipe Connection

- The static pressure in the outside of the unit is 39.2Pa (maximum 98Pa), the length of the air pipe attached is determined by this parameter.

5 The positioning of ceiling hole and indoor unit and hanging screw bolts

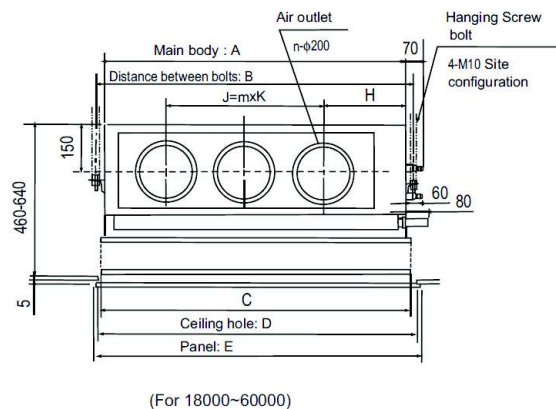


Fig.5-8

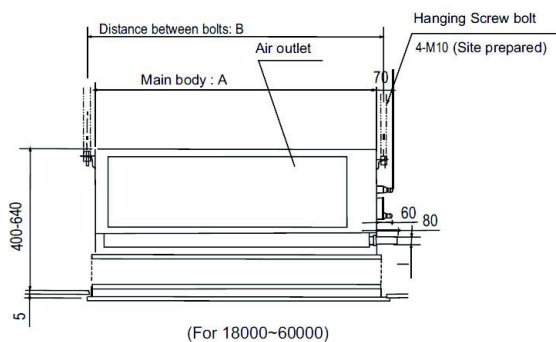


Fig.5-9

NOTE
This chart is based on 36000 type, So, a little differences may exist on the outlook and functions from yours.

- In case of air return from back, please refer to the following:

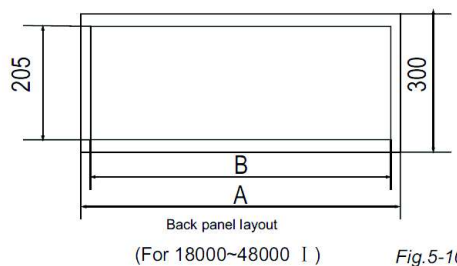


Fig.5-10

- In the above figure, double-point line means the dimensions of air inlet box.
- Please explain clearly when ordering if customers need air inlet box. And note it is below air inlet or back air-inlet.

Technical drawing of the outdoor unit showing dimensions and connection points. The drawing includes the following labels and dimensions:

- Main body: 800
- Distance between bolts: 721
- 75
- 40
- 760
- 630
- Electric control box
- Connecting point of refrigerant pipe (Gas side ϕF)
- 120
- 265
- 145
- 70
- 250
- Connecting point of refrigerant pipe (Liquid side ϕG)
- 335
- Dust proof net
- 450
- Ceiling hole 470
- Panel 500
- Entrances and exits for communication lines of indoor and outdoor units
- (Additional purchase) Canvas air passage
- (Additional purchase) Panel
- (Additional purchase)

Technical drawing of the outdoor unit for the 48000 II~60000 series, showing dimensions and component labels.

Dimensions:

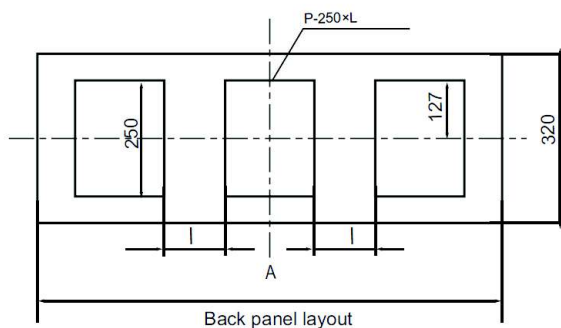
- Main body: 800
- Distance between bolts: 751
- 720
- 630
- 26
- 80
- 100
- 170
- 320
- 70
- 300
- 335
- 450
- Ceiling hole 470
- Panel 500
- 30

Labels:

- Connecting point of refrigerant pipe (Gas side ϕF)
- Connecting point of refrigerant pipe (Liquid side ϕG)
- Connecting point of drain pipe
- Fixing screw
- $\phi 125$ Plank (inside) (For air delivery from outside)
- Filter net
- (Additional purchase) Canvas duct
- (Additional purchase) Air inlet plank
- (Additional purchase)

(For 48000 II~60000)

■ When using a back-air installation, please refer to the following:



(For 48000 II~60000)

Fig.5-12

Table 5-1

mm

| MODE | A | B | C | D | E | F | G | H | I | J | K | M | m | n | Refrigerant |
|---------------|------|------|------|------|------|------|------|-----|------|-----|-----|-----|---|---|---|
| 18000 Btu/h | 1000 | 1050 | 1112 | 1085 | 1470 | 12.7 | 6.35 | 252 | 24.5 | 580 | 290 | 721 | 2 | 3 | R410A (Fig.5-8 ~ Fig.5-10 Fig.5-14) |
| 24000 Btu/h | 1000 | 1050 | 1112 | 1085 | 1470 | 16 | 9.53 | 252 | 24.5 | 580 | 290 | 721 | 2 | 3 | |
| 30000 Btu/h | 1350 | 1400 | 1380 | 1400 | 1430 | 16 | 9.53 | 252 | 35 | 930 | 310 | 721 | 3 | 4 | |
| 36000 Btu/h | 1350 | 1400 | 1380 | 1400 | 1430 | 16 | 9.53 | 252 | 35 | 930 | 310 | 721 | 3 | 4 | |
| 48000 I Btu/h | 1350 | 1400 | 1380 | 1400 | 1430 | 16 | 9.53 | 252 | 35 | 930 | 310 | 721 | 3 | 4 | |



NOTE

The dimension of 24000Btu/h and 30000Btu/h(3 PHASE)are the same

The dimension of 30000Btu/h and 36000Btu/h(1 PHASE)are the same

Table 5-2

mm

| MODE | A | B | C | D | E | F | G | H | I | J | K | L | m | n | P | Refrigerant |
|----------------|------|------|------|------|------|----|------|-----|----|-----|-----|-------|---|---|---|--|
| 48000 II Btu/h | 1350 | 1400 | 1380 | 1400 | 1430 | 16 | 9.53 | 252 | 35 | 930 | 310 | 293.8 | 3 | 4 | 4 | R410A (Fig.5-8 Fig.5-9 Fig.5-12) |
| 60000 Btu/h | 1350 | 1400 | 1380 | 1400 | 1430 | 16 | 9.53 | 252 | 35 | 930 | 310 | 293.8 | 3 | 4 | 4 | |

5.3 Install the main body

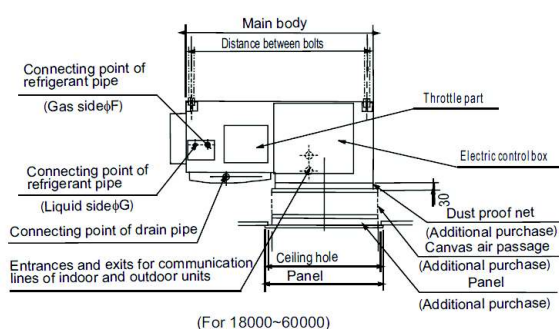


Fig.5-13

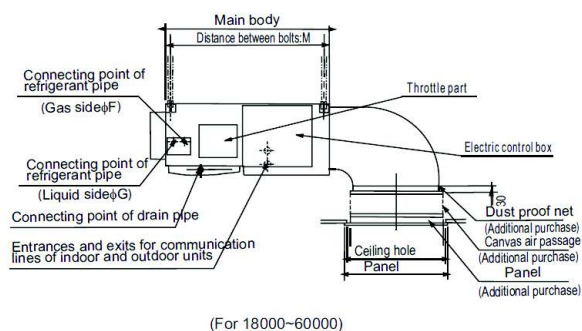


Fig.5-14

5.4 Panel installation

- 1 Unload inner frame.
- Slide the knob, release the buckle from the outside frame hole, then unload the inner frame.
- 2 Hang the outside frame on the main body with face down. (4 places at 4 corners).
- Hang the belt on the hook of the main body.

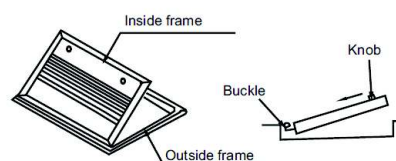


Fig.5-15



NOTE

The signal wire of the remote control receiver must be drawn out through the canvas air passage.

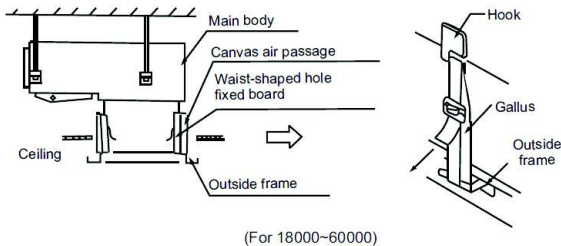


Fig.5-16

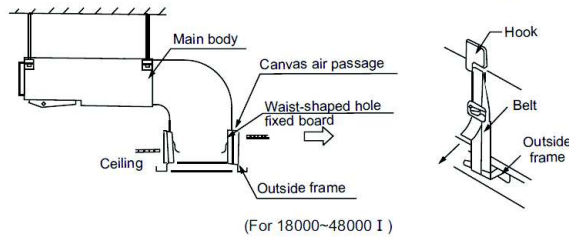


Fig.5-17

3 Fix the outside frame and the canvas air passage with screws.

- Screw must be fixed on from the bottom to the top.

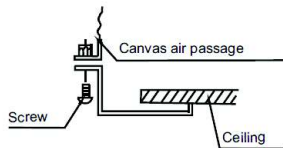


Fig.5-18

4 Hang up the outside frame until it sticks to the ceiling tightly.

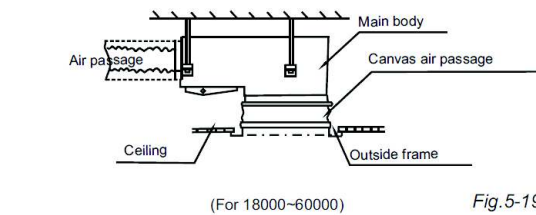


Fig.5-19

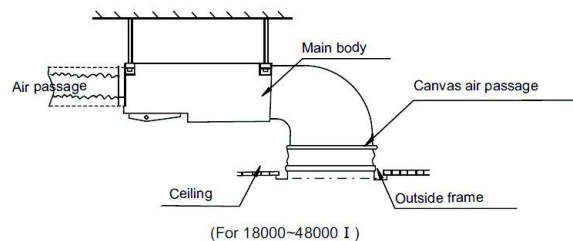


Fig.5-20

5 Fix the main body and the outside frame with the fix board of waist-shape hole (in two places).

- Hang one side of the fix board of the waist-shaped hole on the hook of the main body.
- Tighten the other side of the board with screw to the outside frame.
- Cut off the surplus part of the board with pliers.
- Bend the top of the broken end.



NOTE

when hanging up the outside frame with the fix board of waist-shaped hole and the belt, stick the outside frame tightly to the ceiling and fix it.

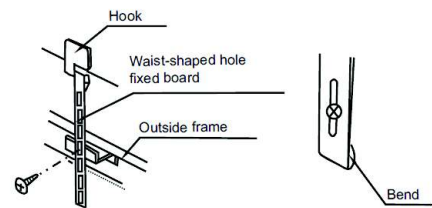


Fig.5-21

6 Install the inner frame on the outside frame (the inverse sequence of unloading the inner frame).



NOTE

Connect the remote control receiver with the indoor unit signal wires and fix it.

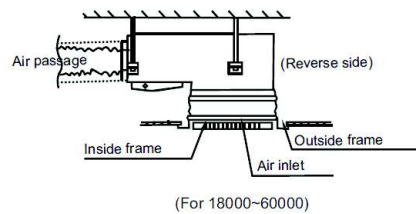


Fig.5-22

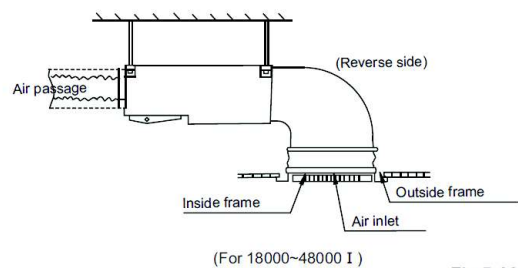


Fig.5-23

7 Install remote controller.

6. OUTDOOR UNIT INSTALLATION

6.1 Installation Place

■ The outdoor unit should be installed in the location that meets the following requirements:

- There is enough room for installation and maintenance.
- The air outlet and the air inlet are not impeded, and can not be reached by strong wind.
- It must be a dry and well ventilating place.
- The support is flat and horizontal and can stand the weight of the outdoor unit. And will no additional noise or vibration.
- Your neighborhood will not feel uncomfortable with the noise or expelled air.
- It is easy to install the connecting pipes or cables.
- Determine the air outlet direction where the discharged air is not blocked.
- There is no danger of fire due to leakage of inflammable gas.
- The piping length between the outdoor unit and the indoor unit may not exceed the allowable piping length.
- In the case that the installation place is exposed to strong wind such as a seaside, make sure the fan operating properly by putting the unit lengthwise along the wall or using a dust or shield.(refer to Fig.6-1)
- If possible, do not install the unit where it is exposed to direct sunlight.
- If necessary, install a blind that does not interfere with the air flow.
- During the heating mode, the water drained off the outdoor unit ,The condensate should be well drained away by the drain hole to an appropriate place, so as not to interfere other people.
- Select the position where it will not be subject to snow drifts, accumulation of leaves or other seasonal debris. If unavoidable, please cover it with a shelter.
- Locate the outdoor unit as close to the indoor unit as possible.
- If possible, please remove the obstacles nearby to prevent the performance from being impeded by too little of air circulation.
- The minimum distance between the outdoor unit and obstacles described in the installation chart does not mean that the same is applicable to the situation of an airtight room. Leave open two of the three directions (M,N,P) (refer to Fig.6-5)

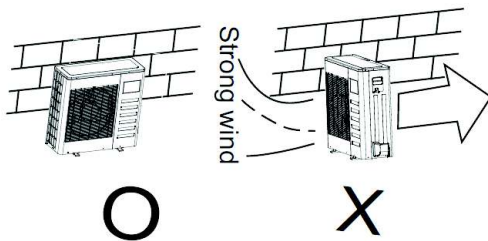


Fig.6-1



NOTE

All the pictures in this manual are for explanation purpose only. They may be slightly different from the air conditioner you purchased(depend on model).The actual shape shall prevail.

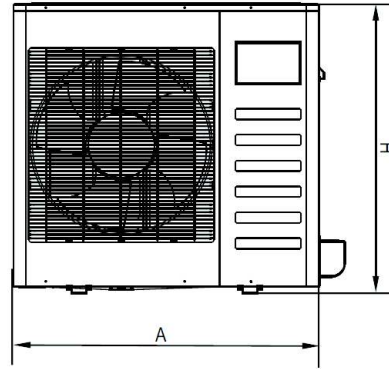


Fig.6-2

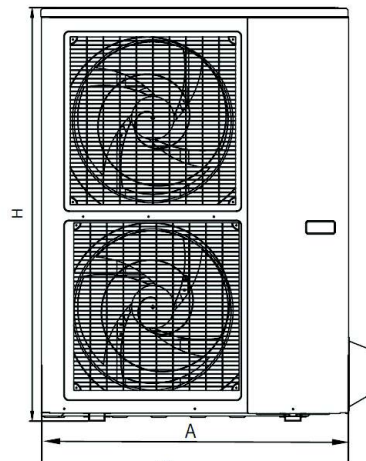


Fig.6-3

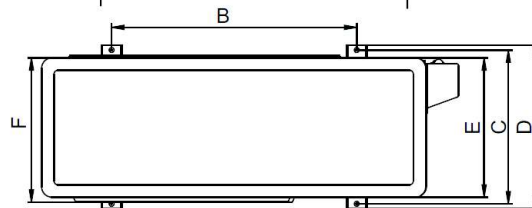


Fig.6-4

Table 6-1

mm

| MODEL | A | B | C | D | E | F | H | REMARK |
|-------|-----|-----|-----|-----|-----|-----|------|----------------------------------|
| 24 | 895 | 590 | 333 | 355 | 302 | 313 | 862 | R22 R407C R410A Fig.6-2 |
| 30 | 990 | 624 | 366 | 396 | 340 | 354 | 966 | |
| 36 | 990 | 624 | 366 | 396 | 340 | 354 | 966 | |
| 48 | 990 | 624 | 366 | 396 | 340 | 354 | 966 | R22 Fig.6-2 |
| 48 | 940 | 600 | 376 | 400 | 340 | 360 | 1245 | R407C R410A Fig.6-3 |
| 60 | 940 | 600 | 376 | 400 | 340 | 360 | 1245 | R22 R407C R410A Fig.6-3 |

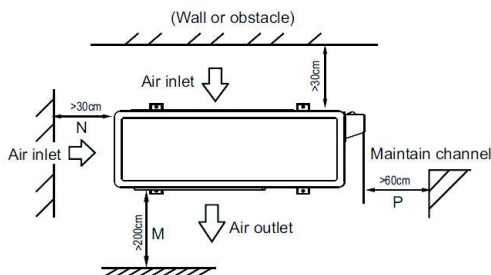


Fig.6-5



NOTE

All the pictures in this manual are for explanation purpose only. They may be slightly different from the air conditioner you purchased(depend on model).The actual shape shall prevail.

6.2 Moving and installation

- Since the gravity center of the unit is not at its physical center, so please be careful when lifting it with a sling.
- Never hold the inlet of the outdoor unit to prevent it from deforming.
- Do not touch the fan with hands or other objects.
- Do not lean it more than 45°, and do not lay it sidelong.
- Make concrete foundation according to the sepecifications of the outdoor units.(refer to Fig.6-6)
- Fasten the feet of this unit with bolts firmly to prevent it from collapsing in case of earthquake or strong wind.(refer to Fig.6-6)

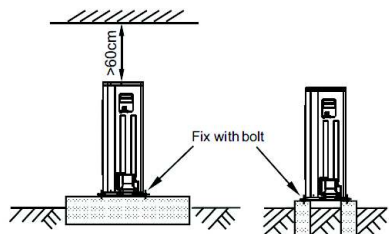


Fig.6-6



NOTE

All the pictures in this manual are for explanation purpose only. They may be slightly different from the air conditioner you purchased(depend on model).The actual shape shall prevail.

7. INSTALL THE CONNECTING PIPE

Check whether the height drop between the indoor unit and outdoor unit, the length of refrigerant pipe, and the number of the bends meet the following requirements:

Table 7-1

| MODEL | | 12 | 18 | 24 | 30 | 30 | 36 | 36 | 48 | 48 | 60 | 24 | 36 |
|-----------------------------------|-----------------------------|----|--------------|----|---------|---------|---------|---------|---------|---------|----|---------|---------|
| | | | | | 1-Phase | 3-Phase | 1-Phase | 3-Phase | 1-Phase | 3-Phase | | 1-Phase | 1-Phase |
| The max height drop(m) | When outdoor unit is top | 5 | 12 | 12 | 15 | 20 | 20 | 20 | 25 | 30 | 30 | 15 | 20 |
| | When outdoor unit is bottom | 5 | 9 | 9 | 9 | 12 | 12 | 12 | 20 | 20 | 20 | 9 | 12 |
| The length of refrigerant pipe(m) | | 10 | 25 | 25 | 25 | 30 | 30 | 30 | 50 | 50 | 50 | 25 | 30 |
| The number of bends | | 5 | Less than 10 | | | | | | | | | | |

The outdoor unit is factory charged with refrigerant. Some systems require additional charging of regrigerant depending on pipe lengths. The additional refrigerant to be cahrged can be calculated from the following formule:

Table 7-2

| R(g) | D(mm) | Ø6.35 | Ø9.53 | Ø12.7 |
|---|-------|-------------|-------------|-------------|
| L(m) | | | | |
| Less than 5m (One-way) | | — | — | — |
| Added Refrigerant When Over 5m(One-way) | | 11g/m×(L-5) | 30g/m×(L-5) | 60g/m×(L-5) |

- Do not let air, dust, or other impurities fall in the pipe system during the time of installation.
- The connecting pipe should not be installed until the indoor and outdoor units have been fixed already.
- Keep the connecting pipe dry, and do not let moisture in during installation.
- Please record the quantity added and store it carefully for future maintenance.

7.1 The Procedure of Connecting Pipes



CAUTION

All field piping must be provided by a licensed refrigeration technician and must comply with the relevant local and national codes.

Do not let air, dust, or other impurities fall in the pipe system during the time of installation.

The connecting pipe should not be installed until the indoor and outdoor units have been fixed already.

Keep the connecting pipe dry, and do not let moisture in during installation.

Execute heat insulation work completely on both sides of the gas piping and the liquid piping. Otherwise, this can sometimes result in water leakage.

1 Measure the necessary length of the connecting pipe, and make it by the following way.

- Connect the indoor unit at first, then the outdoor unit.

- Bend the tubing in proper way. Do not harm to them.

Bend the pipe with thumb



min-radius 100mm

Fig.7-1

- Daub the surfaces of the flare pipe and the joint nuts with frozen oil, and wrench it for 3~4 rounds with hands before fasten the flare nuts.(Refer to chart 16)

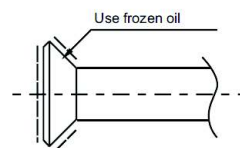


Fig.7-2

- Be sure to use two wrenches simultaneously when you connect or disconnect the pipes.

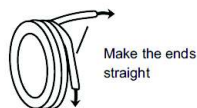


Fig.7-3

- The stop valve of the outdoor unit should be closed absolutely (as original state). Every time you connect it, first loosen the nuts at the part of stop valve, then connect the flare pipe immediately (in 5 minutes). If the nuts have been loosened for a long time, dusts and other impurities may enter the pipe system and may cause malfunction later. So please expel the air out of the pipe with refrigerant before connection.
- Expel the air (refer to the "Expel The Air") after connecting the refrigerant pipe with the indoor unit and the outdoor unit. Then fasten the nuts at the repair-points.
- Bend the connecting pipe of small wall thickness.
 - Cut out a desired concave at the bending part of the insulating pipe.
 - Then expose the pipe (cover it with tapes after bending).
 - To prevent collapsing of deforming, please bend the pipe at its biggest radius.
 - Use bender to get a small radius pipes.



NOTE

The bending angle should not exceed 90°.

Bending position is preferably in the middle of the bendable pipe. The larger the bending radius the better it is.

Do not bend the pipe more than three times.

Be sure to use the same insulating materials when you buy the brass pipe. (More than 9mm thick)

2. Locate The Pipe

- Drill a hole in the wall (suitable just for the size of the wall conduit), then set on the fittings such as the wall conduit and its cover.
- Bind the connecting pipe and the cables together tightly with binding tapes.
- Pass the bound connecting pipe through the wall conduit from outside. Be careful of the pipe allocation to do on damage to the tubing.

3 Connect the pipes. Refer to "How to Connect the pipes" for details.

- 4 Expel the air with a vacuum pump. Refer to "How to expel the air with a vacuum pump" for details.
- 5 open the stop values of the outdoor unit to make the refrigerant pipe connecting the indoor unit with the outdoor unit in fluent flow.
- 6 Check the leakage. Check all the joints with the leak detector or soap water.
- 7 Cover the joints of the connecting pipe with the soundproof / insulating sheath (fittings), and bind it well with the tapes to prevent leakage.

8. REFRIGERANT PIPE CONNECTION

8.1 Expel The Air

1 Flaring

- Cut a pipe with a pipe cutter. (refer to Fig.8-1)

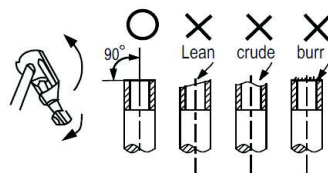


Fig.8-1

- Insert a flare nut into a pipe and flare the pipe.

2 Fasten the nut

- Put the connecting tubing at the proper position, wrench the nuts with hands then fasten it with a wrench. (refer to Fig.8-2)

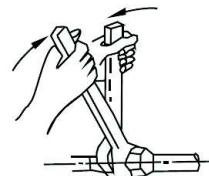


Fig.8-2



CAUTION

Too large torque will harm the bellmouthing and too small will cause leakage. Please determine the torque according to Table 8-1.

Table 8-1

| Pipe gauge | Tightening torque | Flare dimension A | | Flare shape |
|------------|-------------------------------------|-------------------|------|-------------|
| | | min (mm) | max | |
| Ø6.4 | 14.2~17.2 N.m (144~176 kgf.cm) | 8.3 | 8.7 | |
| Ø9.5 | 32.7~39.9 N.m (333~407 kgf.cm) | 12.0 | 12.4 | |
| Ø12.7 | 49.5~60.3 N.m (504~616 kgf.cm) | 15.4 | 15.8 | |
| Ø15.9 | 61.8~75.4 N.m (630~770 kgf.cm) | 18.6 | 19.0 | |
| Ø19.1 | 97.2~118.6 N.m (990~1210 kgf.cm) | 22.9 | 23.3 | |

3 Expel the air with a vacuum pump (Refer to Fig.8-3)

(Please refer to its manual for the way of using manifold valve)

- Loosen and remove the maintenance nuts of stop valves A and B, and connect the charge hose of the manifold valve with the maintenance terminator of stop valve A. (Be sure that stop valves A and B are both closed)
- Connect the joint of the charge hose with the vacuum pump.
- Open the Lo-lever of the manifold valve completely.
- Turn on the vacuum pump. At the beginning of pumping, loosen the maintenance terminator nut of stop valve B a little to check whether the air comes in (the sound of the pump changes, and the indicator of compound meter turns below zero). Then fasten the nut.

- When the pumping has finished, close the Lo-lever of the manifold valve completely and turn off the vacuum pump. When you have pumped for over 15 minutes, please confirm that the indicator of multimeter is on $-1.0 \times 10^{-6} \text{Pa}$ (-76cmHg)
- Loosen and remove the quadrangle cover of stop valves A and B to open stop valve A and B completely, then fasten them.
- Disassemble the charge hose from the repair-mouth of stop valve A, and fasten the nut.

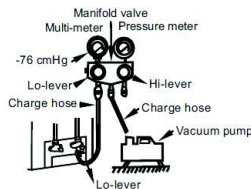


Fig.8-3



CAUTION

All the stop valves should be opened before test operation. Each air conditioner has two stop valves of different sizes on the side of the outdoor unit which operate as Lo-stop value, respectively.(Refer to Fig.8-4)

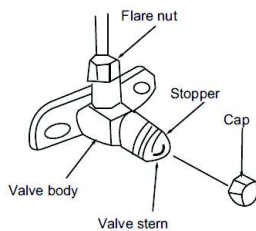


Fig.8-4

8.2 Check the Leakage

Check all the joints with the leak detector or soap water. (See Fig.8-5 as a reference illustration)

in the chart

A.....Lo-stop valve

B.....Hi-stop valve

C,D..Joints of the connecting pipe to the indoor unit.

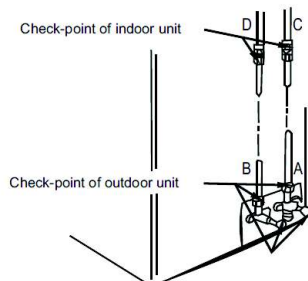


Fig.8-5

8.3 Insulation

- Be sure to with insulating materials cover all the exposed parts of the flare pipe joints and refrigerant pipe on the liquid-side and the gas-side. Ensure that there is no gap between them.
- Incomplete insulation may cause water condensation.

9. CONNECT THE DRAIN PIPE

1 Install indoor unit drain pipe

The outlet has PTI screw thread, Please use sealing materials and pipe sheath(fitting) when connecting PVC pipes.

- The drain pipe of indoor unit must be heat insulated, or it will condense dew, as well as the connections of the indoor unit.
- Hard PVC binder must be used for pipe connection, and make sure there is no leakage.
- With the connection part to the indoor unit, please be noted not to impose pressure on the side of indoor unit pipes.
- When the declivity of the drain pipe downwards is over 1/100, there should not be any winding.
- The total length of the drain pipe when pulled out transversely shall not exceed 20m, when the pipe is over long, a prop stand must be installed to prevent winding.
- Refer to the figures on the right for the installation of the pipes.

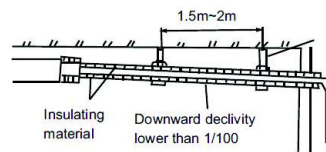


Fig.9-1

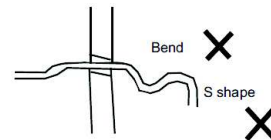


Fig.9-2

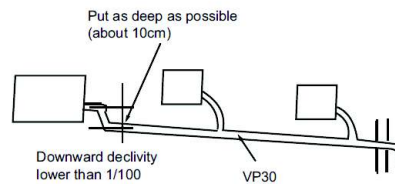


Fig.9-3

2 Drainage test

- Check whether the drainpipe is unhindered
- New built house should have this test done before paving the ceiling.

- Remove the test cover, and stow water of about 2000ml to the water receiver through the stow tube. (Refer to Fig.9-4)

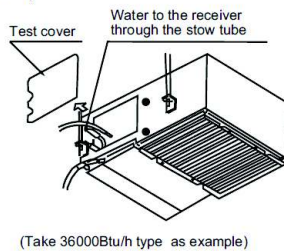


Fig.9-4

3 Drain Elbow Installation(Cooling Only Type Without)

Fit the seal into the drain joint, then insert the drain joint into the base pan hole of outdoor, rotate 90° to securely assemble them. Connect the drain joint with an extension drain hose (Locally purchased), in case of the condensate draining off the outdoor unit during the heating mode.

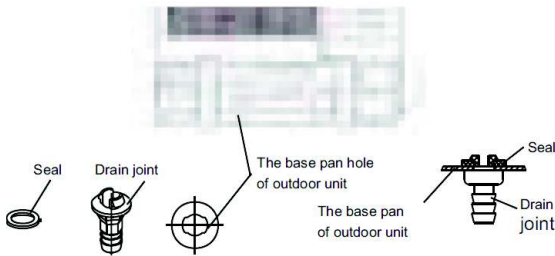


Fig.9-5

NOTE

All the pictures in this manual are for explanation purpose only. They may be slightly different from the air conditioner you purchased(depend on model).The actual shape shall prevail.

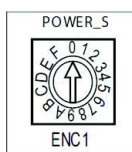
10. CONTROL

- The capacity of the system and the network address of the air-conditioner can be set by the switches on the Main Control Board of the indoor unit.
- After the setting, be sure to cut down the main power supply switch, then turn it on again.
- Setting would be invalid without disconnecting the power.

10.1 Horsepower code set

The capacity of the indoor unit has been set before leaving the factory according to the below table.













Horsepower code



| ENC1 | Toggle switch Code | Capacity(Btu/h) |
|--|--------------------|-----------------|
| Note: The capacity has been set before leaving the factory , anyone can't modify it except the maintenance person. | 4 | 18000 |
| | 5 | 24000 |
| | 7 | 30000 |
| | 8 | 36000 |
| | 9 | 48000 I |
| | 9 | 48000 II |
| | 9 | 60000 |

10.2 Network address set

Every air-conditioner in network has only one network address to distinguish each other. Address code of air-conditioner in LAN is set by code switches S1 & S2 on the Main Control Board of the indoor unit, and the set range is 0-63.

| Toggle switch set | | | Network address code |
|---|---|-------|----------------------|
| S1 | S2 | | |
|  |  ~  | 00~15 | |
|  |  ~  | 16~31 | |
|  |  ~  | 32~47 | |
|  |  ~  | 48-63 | |

11. WIRING



CAUTION

The appliance shall be installed in accordance with national wiring regulations

The air conditioner should use separate power supply with rated voltage.

The external power supply to the air conditioner should have ground wiring, which is linked to the ground wiring of the indoor and outdoor unit.

The wiring work should be done by qualified persons according to circuit drawing.

An all-pole disconnection device which has at least 3mm separation distance in all pole and a residual current device(RCD) with the rating of above 10mA shall be incorporated in the fixed wiring according to the national rule.

Be sure to locate the power wiring and the signal wiring well to avoid cross-disturbance.

Do not turn on the power until you have checked carefully after wiring.



NOTE

Remark per EMC Directive 89/336/EEC

For to prevent flicker impressions during the start of the compressor (technical process), following installation conditions do apply.

- 1 The power connection for the air conditioner has to be done at the main power distribution. The distribution has to be of a low impedance, normally the required impedance reaches at a 32 A fusing point.
- 2 No other equipment has to be connected with this power line.
- 3 For detailed installation acceptance please refer to your power supplier, if restrictions do apply for products like washing machines, air conditioners or electrical ovens.
- 4 For power details of the air conditioner refer to the rating plate of the product.
- 5 For any question contact your local dealer.

11.1 Connect the cable

- Disassemble the bolts from the cover.(If there isn't a cover on the outdoor unit, disassemble the bolts from the maintenance board, and pull it in the direction of the arrow to remove the protection board.)
(refer to Fig. 11-1)
- Connect the connective cables to the terminals as identified with their respective matched numbers on the terminal block of indoor and outdoor units.
- Re-install the cover or the protection board.

11.2 The Specification of Power

(refer to Table 11-1)

11.3 Wiring figure

(refer to Fig.11-2~Fig. 11-5)

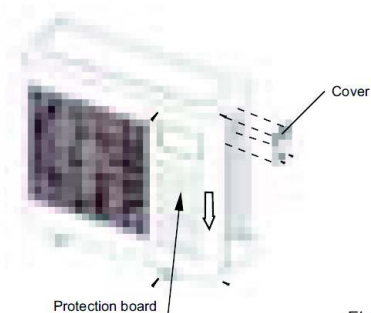


Fig.11-1



NOTE

All the pictures in this manual are for explanation purpose only. They may be slightly different from the air conditioner you purchased(depend on model).The actual shape shall prevail.

12. TEST OPERATION

- 1 The test operation must be carried out after the entire installation has been completed.
- 2 Please confirm the following points before the test operation:
 - The indoor unit and outdoor unit are installed properly.
 - Tubing and wiring are correctly completed.
 - The refrigerant pipe system is leakage-checked.
 - The drainage is unimpeded.
 - The heating insulation works well.
 - The ground wiring is connected correctly.
 - The length of the tubing and the added stow capacity of the refrigerant have been recorded.
 - The power voltage fits the rated voltage of the air conditioner.
 - There is no obstacle at the outlet and inlet of the outdoor and indoor units.
 - The gas-side and liquid-side stop valves are both opened.
 - The air conditioner is pre-heated by turning on the power.
- 3 According to the user's requirement, install the remote controller frame where the remote controller's signal can reach the indoor unit smoothly.
- 4 Test operation
 - Set the air conditioner under the mode of "COOLING" with the remote controller, and check the following points. If there is any malfunction, please resolve it according to the chapter "Troubleshooting" in the "Owner's Manual".
 - 1) The indoor unit
 - a. Whether the switch on the remote controller works well.
 - b. Whether the buttons on the remote controller works well.
 - c. Whether the air flow louver moves normally.
 - d. Whether the room temperature is adjusted well.
 - e. Whether the indicator lights normally.
 - f. Whether the temporary buttons works well.
 - g. Whether the drainage is normal.
 - h. Whether there is vibration or abnormal noise during operation.
 - i. Whether the air conditioner heats well in the case of the HEATING/COOLING type.
 - 2) The outdoor unit
 - a. Whether there is vibration or abnormal noise during operation.
 - b. Whether the generated wind, noise, or condensed of by the air conditioner have influenced your neighborhood.
 - c. Whether any of the refrigerant is leaked.



CAUTION

A protection feature prevents the air conditioner from being activated for approximately 3 minutes when it is restarted immediately after shut off.

■ The Specification of Power

■ Table 11-1

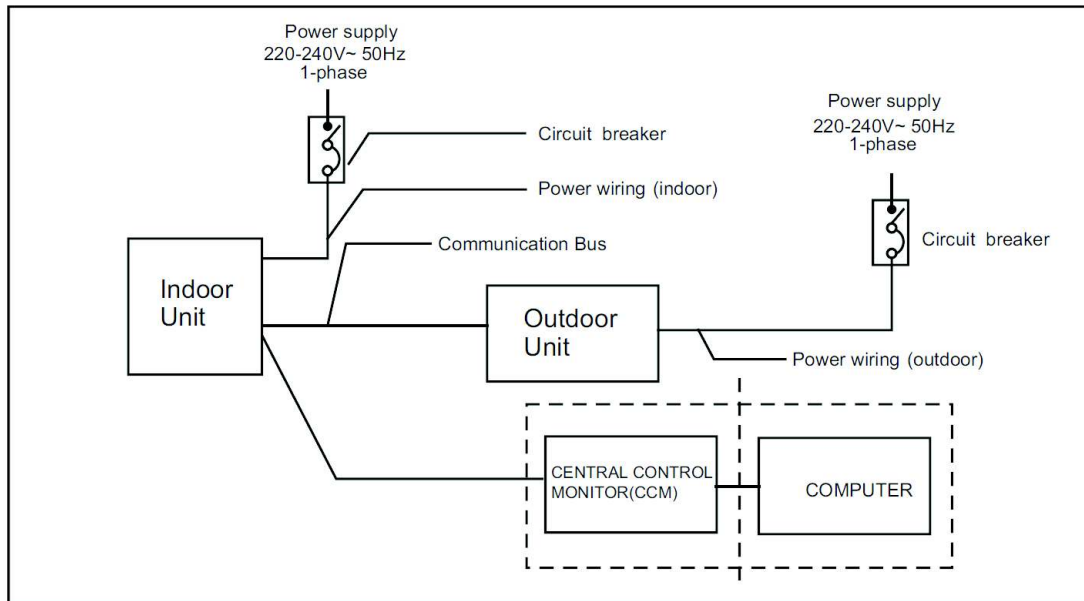
| TYPE | | 18000-24000Btu/h (with 1 Phase Outdoor Unit) | 30000-48000Btu/h (with 1 Phase Outdoor Unit) | 36000-60000Btu/h (with 3 Phase Outdoor Unit) |
|---|---------------------------------|---|---|---|
| INDOOR UNIT POWER | PHASE | 1-PHASE | 1-PHASE | 1-PHASE |
| | FREQUENCY AND VOLT | 220-240V~, 50HZ | 220-240V~, 50HZ | 220-240V~, 50Hz |
| | POWER WIRING (mm ²) | 3x1.0 | 3x1.0 | 3x1.0 |
| | CIRCUIT BREAKER(A) | 15 | 15 | 15 |
| OUTDOOR UNIT POWER | PHASE | 1-PHASE | 1-PHASE | 3-PHASE |
| | FREQUENCY AND VOLT | 220-240V~, 50HZ | 220-240V~, 50HZ | 380-415~, 50HZ |
| | POWER WIRING (mm ²) | 3x2.5 | 3x2.5 | 5x2.5 |
| | CIRCUIT BREAKER(A) | 30 | 40 | 40 |
| INDOOR/OUTDOOR CONNECTING WIRING (WEAK ELECTRIC SIGNAL) (mm ²) | | 3-core shielded wire 3x0.5 | 3-core shielded wire 3x0.5 | 3-core shielded wire 3x0.5 |



CAUTION

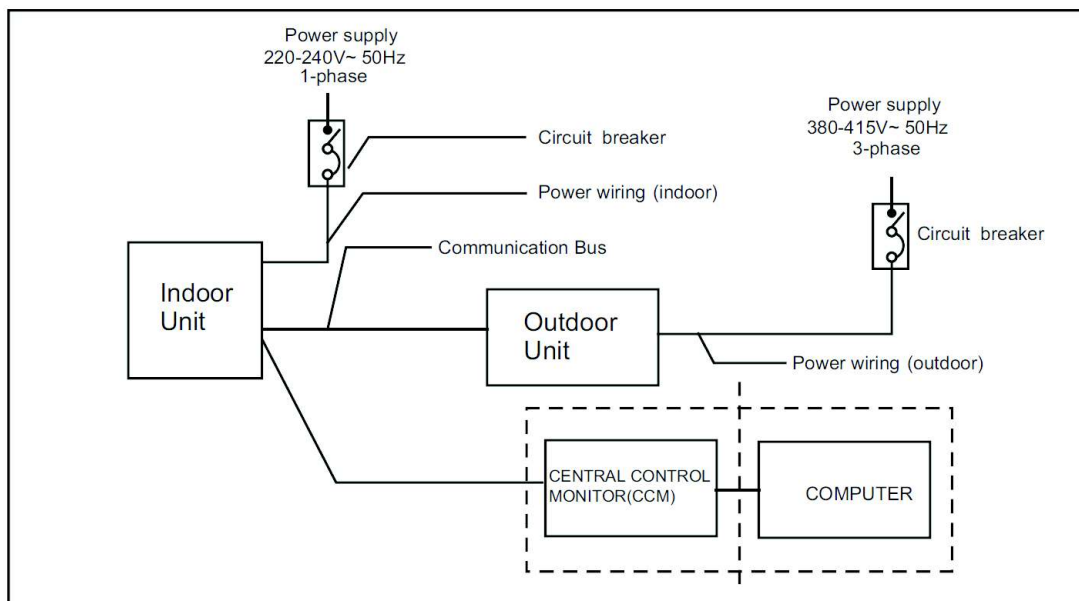
A disconnection device having an air gap contact separation in all active conductors should be incorporated in the fixed wiring according to the National Wiring Regulation.
The power cord type designation is H07RN-F.

■ Fig.11-2



For 18000-60000Btu/h (with 1-Phase outdoor unit)

■ Fig.11-3



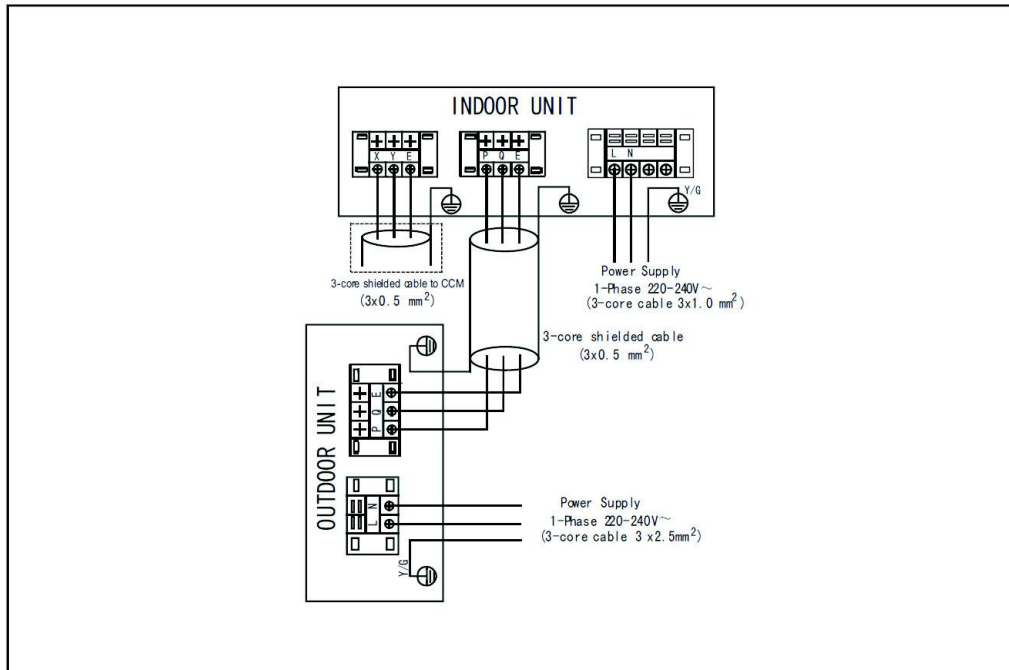
For 36000-60000Btu/h (with 3-Phase outdoor unit)



CAUTION

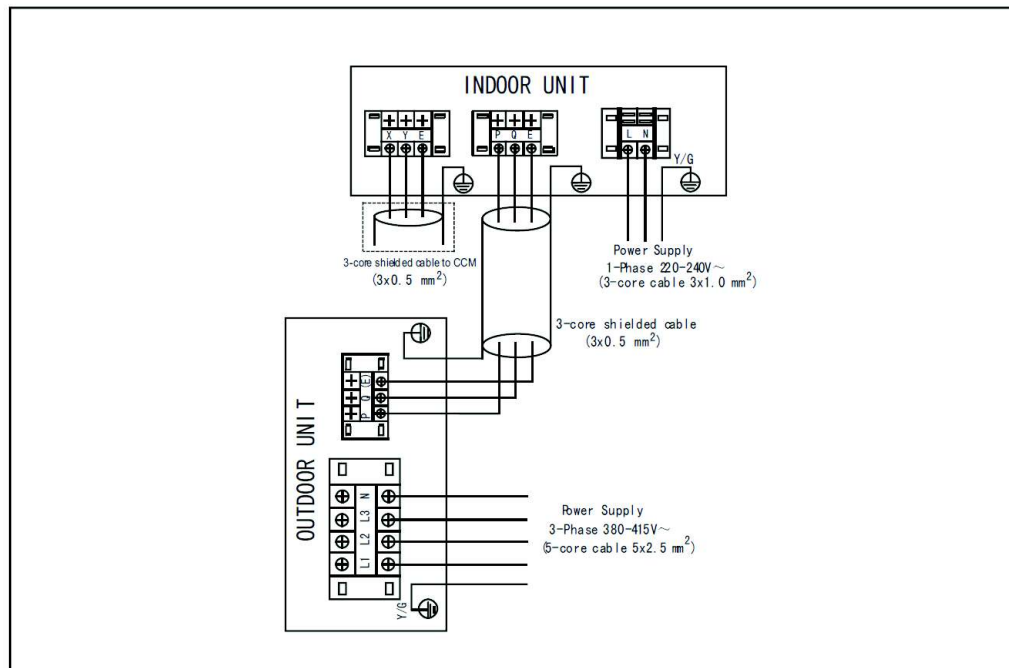
The wiring diagram of the air-conditioner are shown as follows. When wiring, please choose the corresponding figure, or it may cause damage.

■ Fig.10-4



For 18000-60000Btu/h (with 1-Phase outdoor unit)

■ Fig.10-5



For 36000-60000Btu/h (with 3-Phase outdoor unit)